



DEPARTMENT OF HEALTH & HUMAN SERVICES

Public Health Service
Agency for Toxic Substances
and Disease Registry

Memorandum

Date February 21, 1991

From Chief, Technical Support Section, Emergency Response and Consultation Branch, Division of Health Assessment and Consultation, ATSDR (E32)

Subject Health Consultation: Franklin Plastics Site
Kearny, New Jersey

To Lisa K. Voyce
Public Health Advisor
ATSDR Regional Services
EPA Region II
Through: Director, DHAC, ATSDR (E32)
Acting Chief, ERCB, DHAC, ATSDR (E32)

BACKGROUND AND STATEMENT OF ISSUES

The U.S. Environmental Protection Agency (USEPA), Region II, has asked the Agency for Toxic Substances and Disease Registry (ATSDR) to review recent (June 1990) data on the Franklin Plastics Site (FPS) and to advise them on the health risk implications posed by contaminants detected on-site.

The FPS occupies approximately 8 acres in a mixed industrial/commercial area of Kearny. It is estimated that approximately 1,300 persons reside within 0.25 miles of the site. No information was provided regarding the location of the residences relative to the site or about the characteristics of the surrounding community.

The site is bounded on the west by the Passaic River, on the east by Passaic Avenue, and on the north and south by industrial and commercial businesses. The main structure on-site is a one story manufacturing building (Attachment 1). An unlined tank farm area, containing three inactive and two active plasticizer tanks, is located along the southern face of the manufacturing building. The tank farm area is surrounded by a concrete block wall. The site property is fenced except where it is bordered by the Passaic River (Attachment 1).

The land area adjacent to the river slopes toward the river and contains a sludge pile and several areas of abandoned drums. This land area occasionally becomes flooded. Segments of the river reportedly are used for recreational purposes, although it is unclear if this occurs at locations near, upstream, or downstream of the FPS.

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The drums located in this land area (some on the surface and some partially buried) are reported to contain crumbled tiles from asphalt and vinyl flooring manufacturing operations that were conducted at the site from 1946 to 1974. An outfall pipe is located at the southwest corner of the site along the river. This pipe serves as a conduit into the river for noncontact cooling water that is collected from the facility sump.

Beginning in 1976 and continuing to the present, a portion of the site has been used for compounding polyvinyl chloride (PVC) pellets. This process occurs within the one story manufacturing building. No information was provided about the workforce that routinely spends time on-site or those that make deliveries or pickups at the bay area.

General public access to the site appears to be restricted by the fence, although there are several gates along Passaic Avenue. Reportedly, public access to the site may be possible from the river. The main entrance to the site is located at the northeast corner of the site and there is another gate near the bay doors of the manufacturing building along Passaic Drive (Attachment).

The FPS has been the subject of several environmental assessments or investigations since 1980. Those investigations indicated that on-site surface and subsurface soils (6 to 74 inches below ground), sediments, and shallow groundwater (depth not given) were contaminated by a variety of heavy metals and organic compounds, particularly lead and phthalates, respectively. Subsurface soil samples taken from an area just on the southwest corner of the building contained the highest levels of phthalate and lead detected during the 1987 sampling round. For phthalates, the compound di(2-ethylhexyl)phthalate (DEHP), was detected at a maximum concentration of 26,000 mg per kilogram (kg) or parts per million (ppm); lead was detected at a level of 2,150 ppm. Other areas reported to contain elevated levels of contamination were the tank farm area, the sloped area along the river, and several areas of heavily stained soil. Individual contaminant concentrations for these areas were not given.

It was reported that shallow groundwater (undefined) beneath the site is contaminated with petroleum hydrocarbons and

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phthalates. However, no information was provided to ATSDR about which specific petroleum hydrocarbon components and individual phthalates were detected nor their concentrations. Maximum concentrations of "petroleum hydrocarbons" were reported to be 7.4 milligrams (mg) per liter (l) of water. The highest levels were detected in monitoring well (MW) #1, a well believed to be upgradient of possible contamination emanating from the site. Although phthalates were detected in groundwater, they were also reportedly detected in the blanks, indicating possible laboratory or sampling contamination.

In addition to samples from the shallow aquifer, groundwater samples were reportedly obtained from a deep, on-site production well. The location and depth of this well were not given. Petroleum hydrocarbon concentrations were reported as less than 0.5 mg/l; maximum phthalate concentrations were reported as 0.017 mg/l. Four phthalates (not identified) were reportedly detected. Groundwater flow patterns for the area of the site were not described. Downstream of the site neither groundwater or surface water from the Passaic River are used for potable water supplies. Because of the salinity, the Passaic River is not used for irrigational purposes within an area 3-miles downstream of the site.

A limited number of samples of surface soil, sediment, and surface water associated with the sediments were taken during the June 1990 sampling round. The samples were analyzed for phthalates, heavy metals, and selected polycyclic aromatic hydrocarbons (PAHs). The environmental media sampled and their locations are shown in the Attachment. Groundwater, which had been sampled during previous investigations, was not sampled during this latest sampling round.

Results of the sampling indicate that high levels of total phthalates (DEHP, butylbenzylphthalate, and di-n-octylphthalate) were present in sediments associated with the off-site storm drains along Passaic avenue [1,907 ppm (sed3); 1,758 ppm (sed4)] and the on-site sump pit near the manufacturing building [14,270 ppm (sed2)]. High levels of phthalates, mostly butylbenzylphthalate, were also detected in some surface soil samples found in the sludge pile near the river [16,000 ppm (s4)] and near Drum Area #2 [11,110 ppm (s2)] also along the Passaic River. An area of stained soil near the bay doors (s7) had levels of phthalates approaching

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1,800 ppm. Reportedly, water runoff from this latter area into off-site areas of public access were observed during a site visit. Phthalates levels in surface water samples were reportedly below the levels of detection (not specified).

Elevated levels of lead (above 500 ppm but below 1,000 ppm) were found in sediments associated with the storm drains and sump pit. Even higher levels of lead were detected (reported as estimates) in soils near the bay doors (1,430 ppm, s7) and in an area just west of the hoppers (2,520 ppm, s6).

Sampling also identified several locations that had elevated concentrations of PAHs, possibly because of coal ash piles reported on-site. However, total PAHs in any sample where they were detected rarely exceeded 50 ppm and most often samples contained less than 10 ppm.

DOCUMENTS AND INFORMATION REVIEWED

1. Final Draft, Site Inspection Report, Franklin Plastics Corp., September 17, 1990
2. ATSDR Toxicological Profiles: PAHs and Di(2-ethylhexyl)phthalate

DISCUSSION

The finding of elevated levels of phthalates and lead in sediments associated with the storm drains indicates that some off-site migration of contaminants is occurring into areas of public traffic. Additional migration of contaminants into the river is also possible, particularly during periods of flooding. However, because of the industrial/commercial nature of this area, repeated contact by the general public, with contaminants located in the storm drains or in other off-site areas, appears remote. Even if exposures via inhalation or incidental ingestion following inhalation were to occur, it appears that such exposures would be infrequent and would be to relatively small concentrations when compared to the doses necessary to induce adverse health effects. Frequent ingestion of contaminated sediments is also unlikely at this site. Likewise, dermal exposures among the general population are likely to be insignificant.

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On the other hand, direct contact leading to exposures via dermal, inhalation, or ingestion following inhalation of sediments by workers who are responsible for cleaning the sump area or making repairs is much more likely to occur.

Animal studies and observations of humans exposed occupationally or incidentally to phthalates during dialysis therapy suggest that the phthalates, as a group, tend to have a low order of acute and chronic toxicity. The compound, di(2-ethylhexyl)phthalate (DEHP), is the phthalate that is most frequently encountered by humans in their environment. Phthalates may be present in foods that have been wrapped in plastics and average daily exposures through contaminated foods has been estimated to range from 0.3 to 2 mg per day. For comparison, a person would need to ingest about 125 mg of the most contaminated soil at this site to obtain a dose of 2 mg per day. No health effects have been attributed to such exposures.

The primary concern about phthalates is that they have been shown to be carcinogenic in animals that have ingested large doses of DEHP during their lifetimes. Although there is no evidence to indicate that humans exposed to phthalates have developed cancer, it is prudent to limit exposures.

Although workers will have greater access to the more contaminated areas than the public, it is highly unlikely that they would ingest or come in direct contact with the large quantities of sediment, soil, or water that appear to be required to produce either acute or chronic effects as indicated by animal studies. In general, the same can be said for exposures to lead and PAHs at this site. One possible concern could occur if repeated contamination of work clothes occurs and the contamination is carried into homes where small children and toddlers may be exposed.

Because of the flooding that occasionally occurs and the levels of phthalates in the sloped area adjacent to the river, some phthalates may be entering the Passaic River. The phthalates can bioaccumulate to some degree in aquatic invertebrates which might serve as a food source for fish. Although little information was available about fishing in the river, exposures to humans as a result of ingesting fish from the river would appear to be insignificant. Whether or not migration of contaminants into the river from this site

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represents an environmental concern is beyond the scope of this Consultation.

CONCLUSIONS

Based on the available data and information, the ATSDR concludes that no apparent health threat is posed to workers or nearby residents by the levels of contamination detected at the site.

RECOMMENDATIONS

1. Ensure that contamination is not being carried to worker's homes via their work clothes.



Allan S. Susten, Ph.D., DABT

Attachment

ATSDR:DHAC:ERCB:AASusten:jaf:2/13/91:0615
Doc: FRNKLN2.CNS

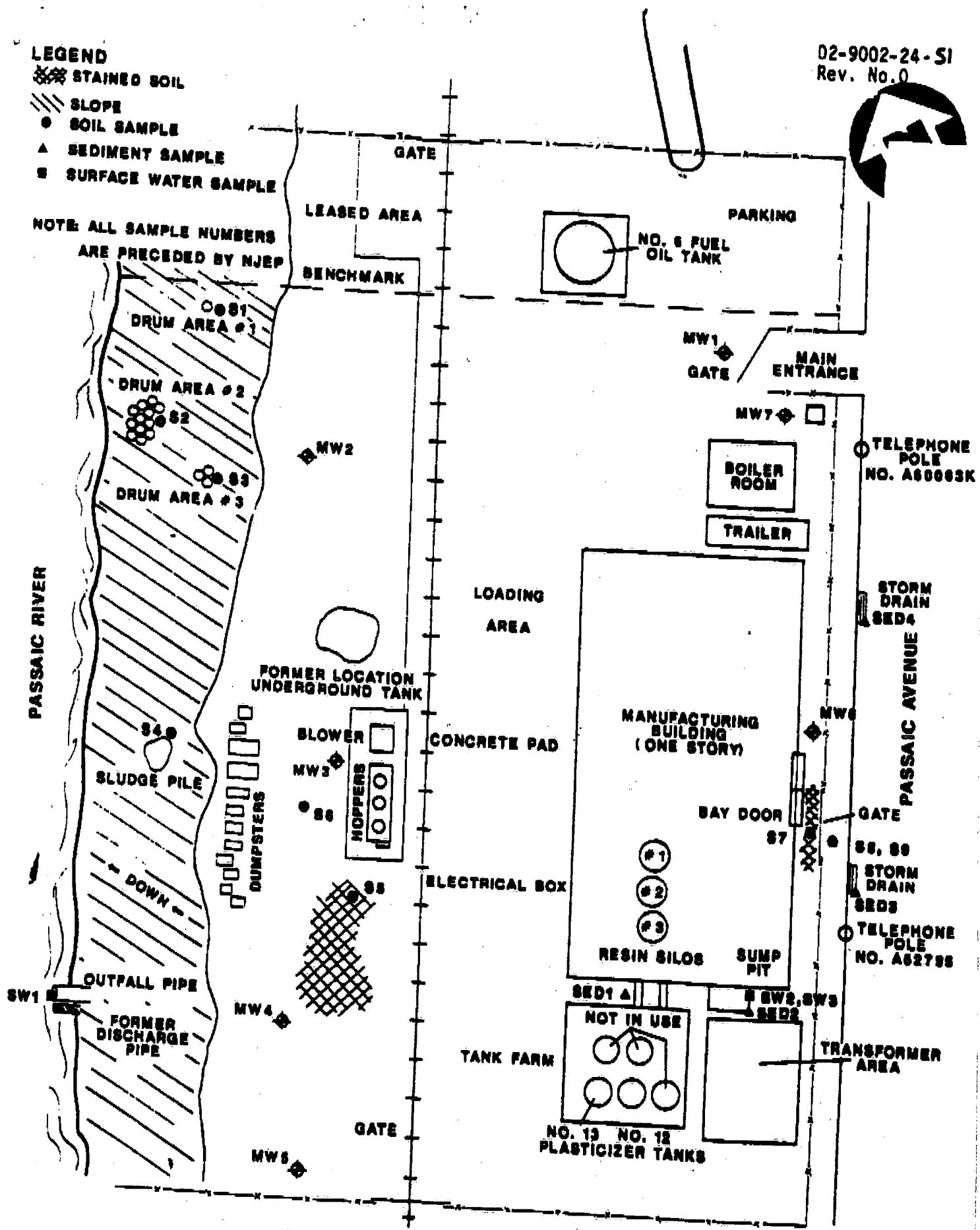
02-9002-24-SI
Rev. No. 0



LEGEND

- STAINED SOIL
- SLOPE
- SOIL SAMPLE
- SEDIMENT SAMPLE
- SURFACE WATER SAMPLE

NOTE: ALL SAMPLE NUMBERS ARE PRECEDED BY NJEP



SAMPLE LOCATION MAP
FRANKLIN PLASTICS CORP., KEARNY, N.J.

FIGURE 4



Nick - your copy?

Agency for Toxic Substances and Disease Registry

Facsimile Transmission

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Comments: